

Staff Gages

Introduction

Five of the lakes were selected for installation of staff gages for monitoring the volume of water in the lakes. Lakes with staff gages are Butler, Hamilton, Harrison County Public Water Supply District No. 1, Marceline and Monroe City. The volume in each lake is determined by reading the elevation on the staff gage and looking at the elevation-storage plot to determine the existing volume of water in the lake. With the storage and rainfall history, an estimate of future demands on the system can be made using one of the two recent historical drought periods of 1955 through 1957 and 1988 through 1990. Recent average daily municipal water demands were used to develop the charts. Year 2000 was used to develop the Marceline and Monroe City charts. Year 2001 was used for the other 3 cities. The year was selected based on the highest daily demand. By use of these charts and reading the staff gages, an estimate of remaining water supply may be made for planning future water needs.

Analysis for development for staff gage studies

Staff gages were installed for monitoring the volume of water in each of the five lakes selected and were used to project an estimate of future water availability for developing a plan to extend the water supply to get through the drought cycle.

Two drought periods are presented for comparing to a drought condition. The most recent period extended from 1988 through 1989. The most severe extended from 1955 through 1958. The RESOP program was used to estimate the effects of each drought period. Three RESOP runs were made on each reservoir for both dry periods. One beginning at full pool, the second beginning five feet below the spillway and the third run beginning ten feet below the spillway. Monthly accumulated rainfall for each of the dry periods are presented so that comparisons can be made for a current drought and the historical dry period.

Butler, Missouri Water Supply 1955 through 1958

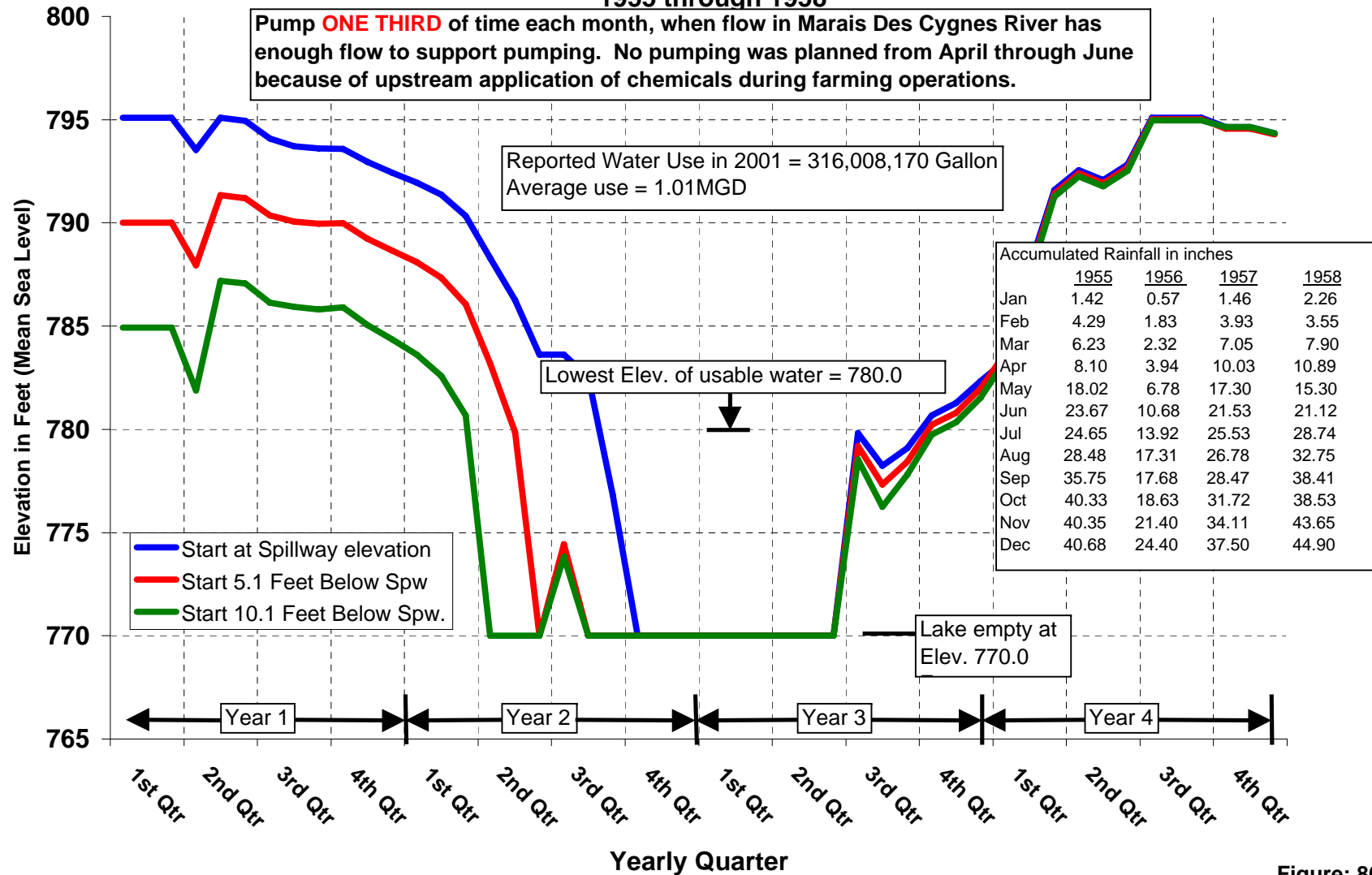


Figure: 80.1.a

Butler, Missouri Water Supply 1988 through 1990

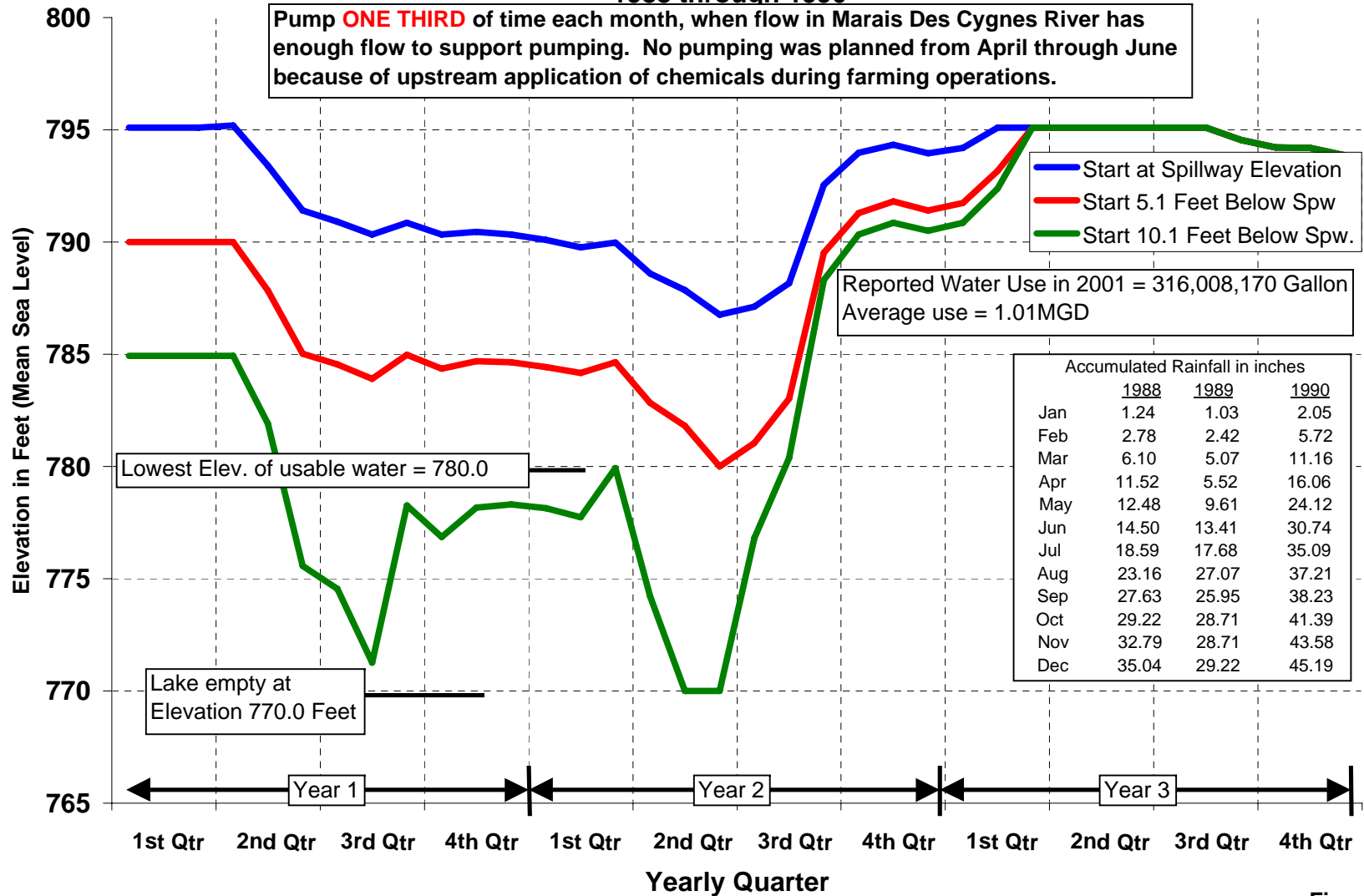


Figure: 80.1.b

Butler, Missouri Water Supply 1955 Through 1958

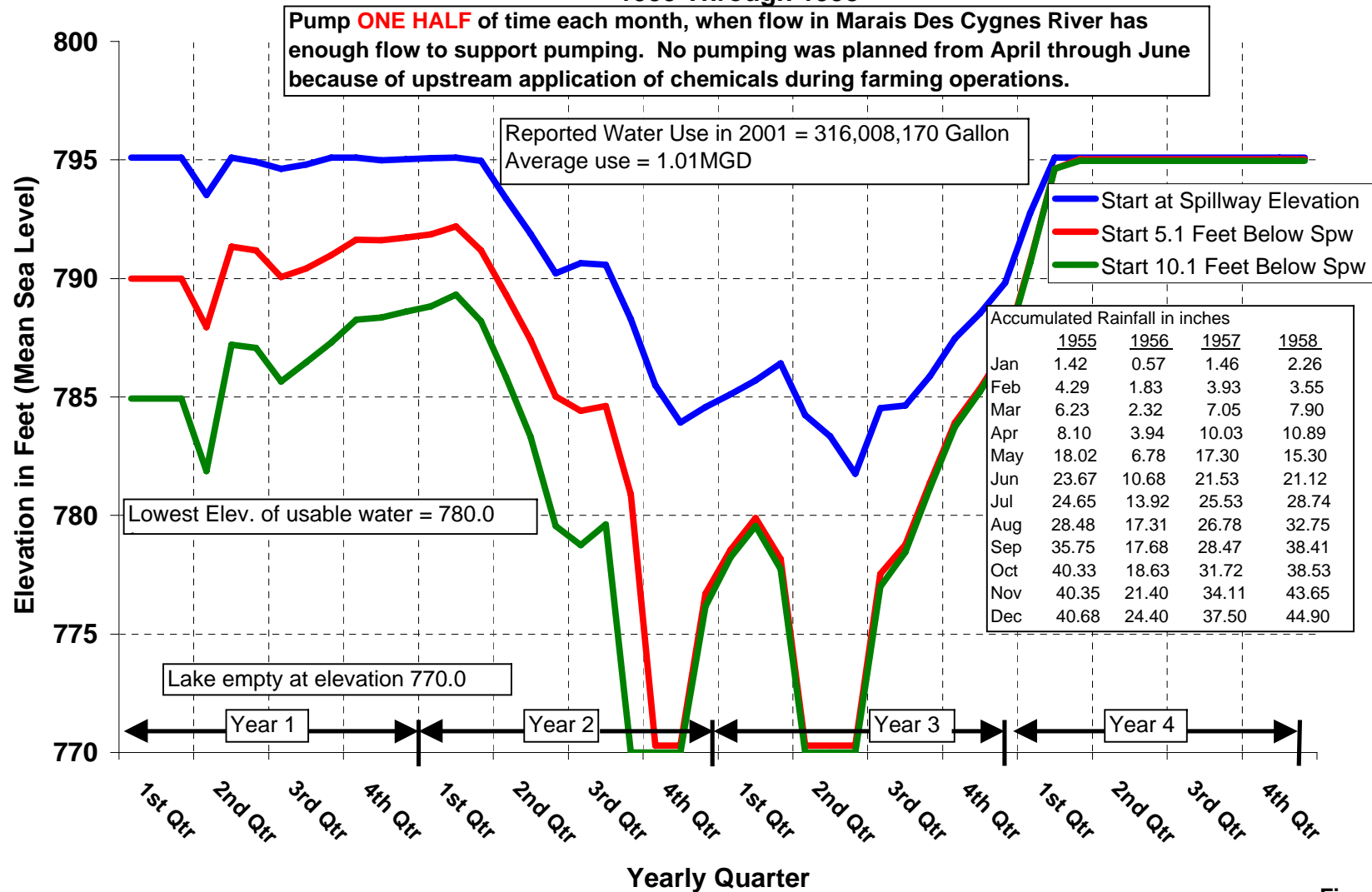


Figure: 80.1.c

Butler, Missouri Water Supply Study 1988 Through 1990

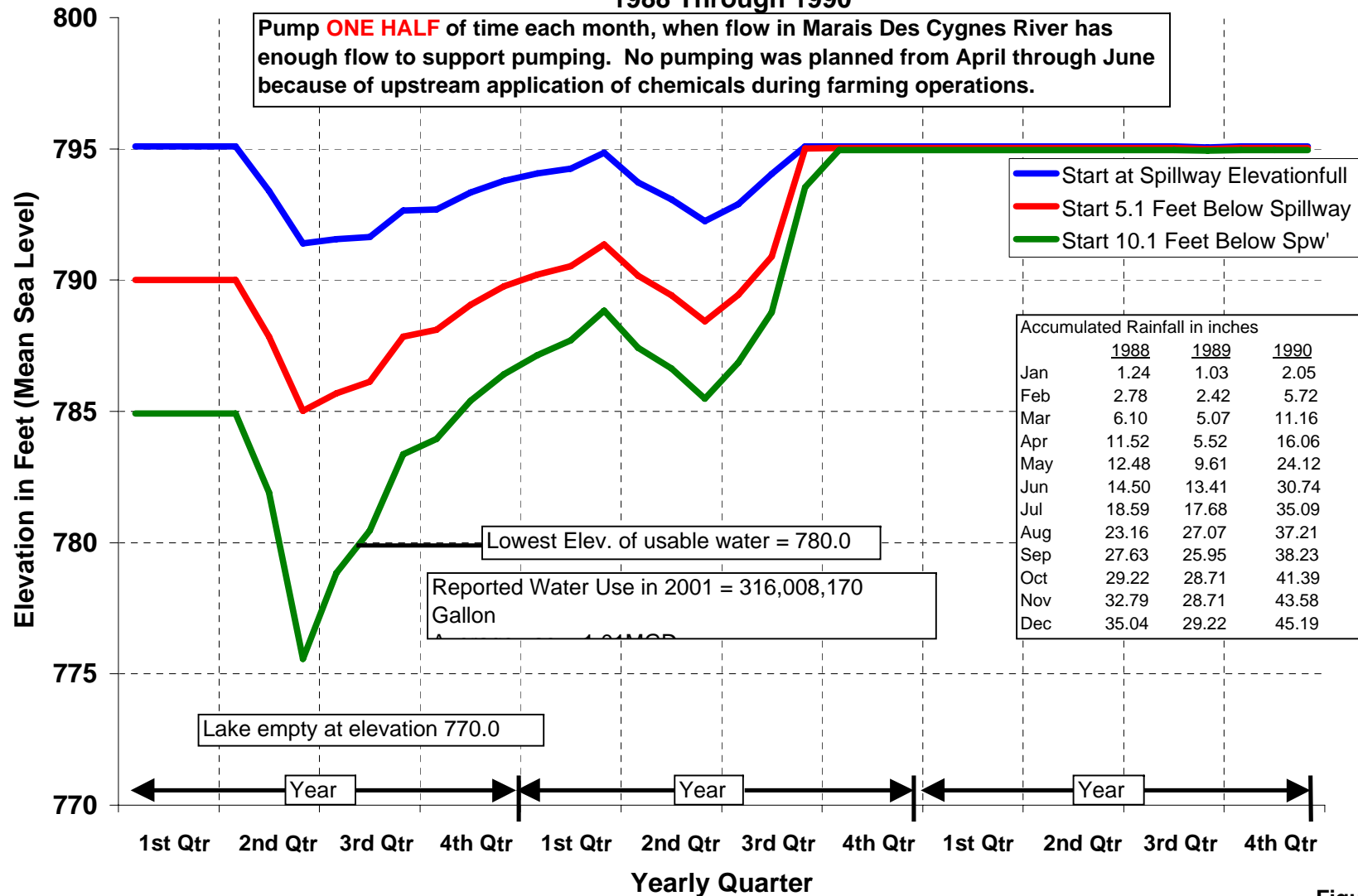


Figure: 80.1.d

Harrison County, Missouri
Rural Water District #1 Water Supply (Eagleville)
1955, 1956 and 1957

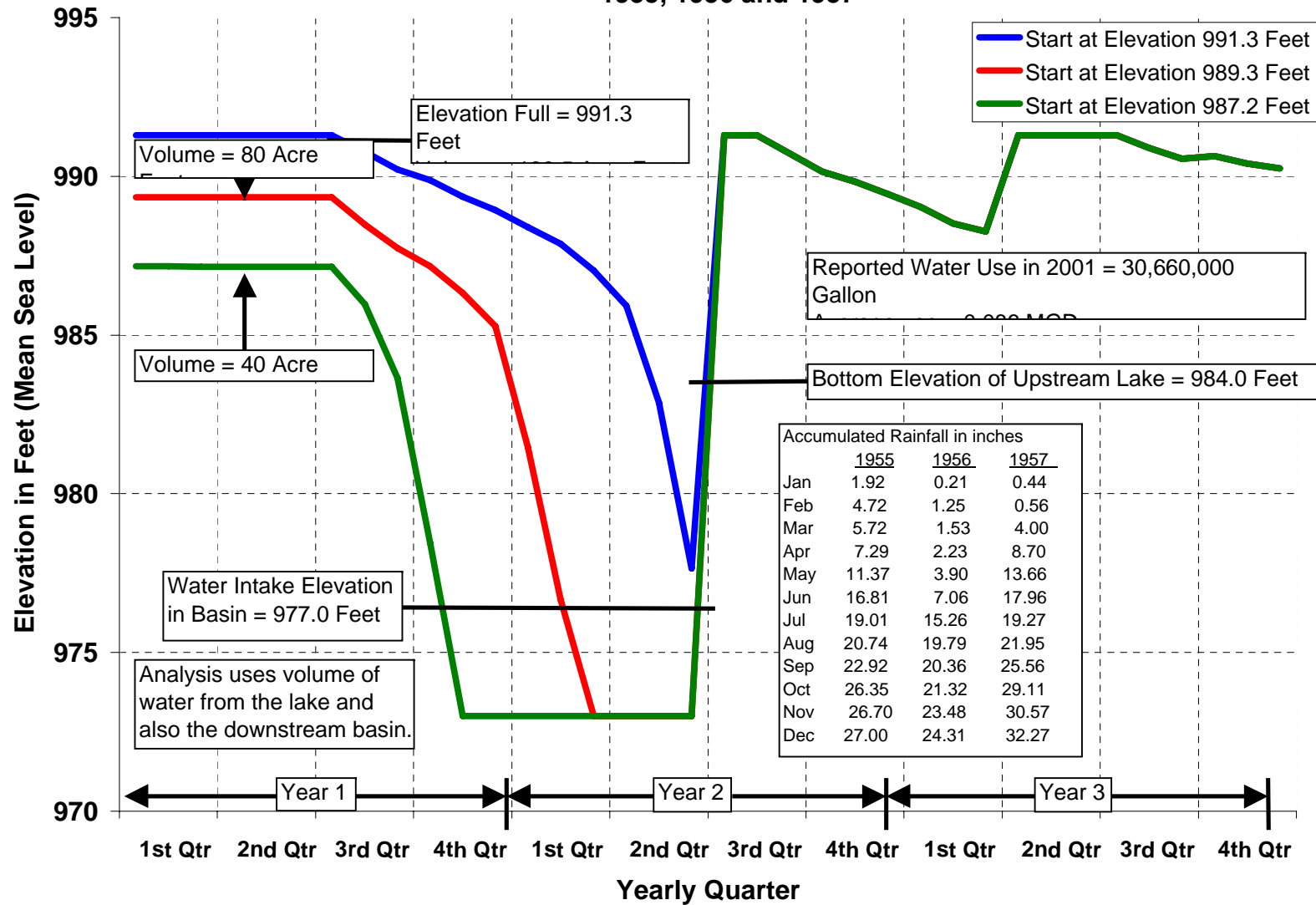


Figure: 80.2.a

Harrison County, Missouri
Rural Water District #1 Water Supply (Eagleville)
1988, 1989 and 1990

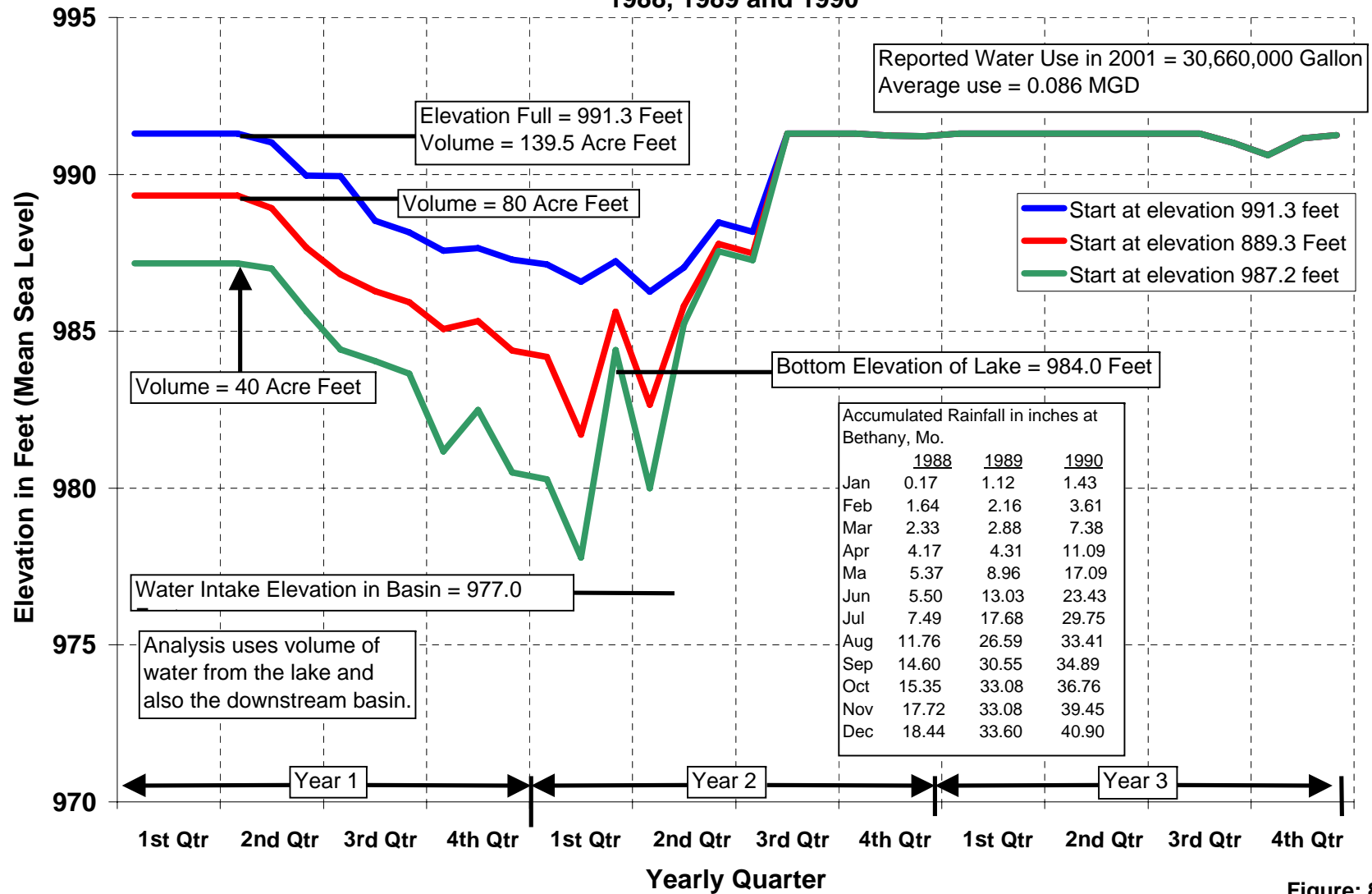


Figure: 80.2.b

Hamilton, Missouri Water Supply 1955-1958 Drought

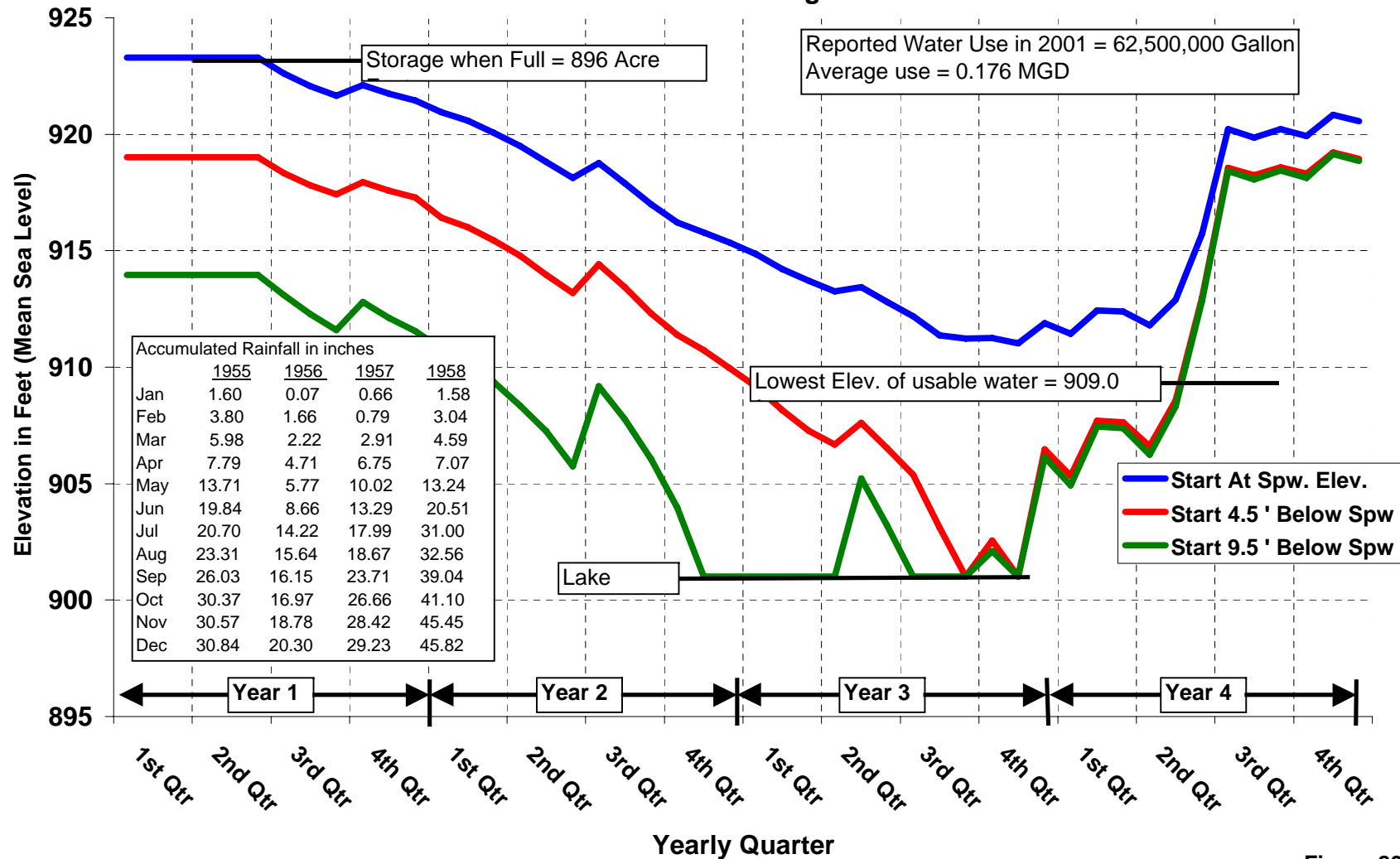


Figure 80.3.a

Hamilton, Missouri Water Supply 1988, 1989 and 1990 Drought

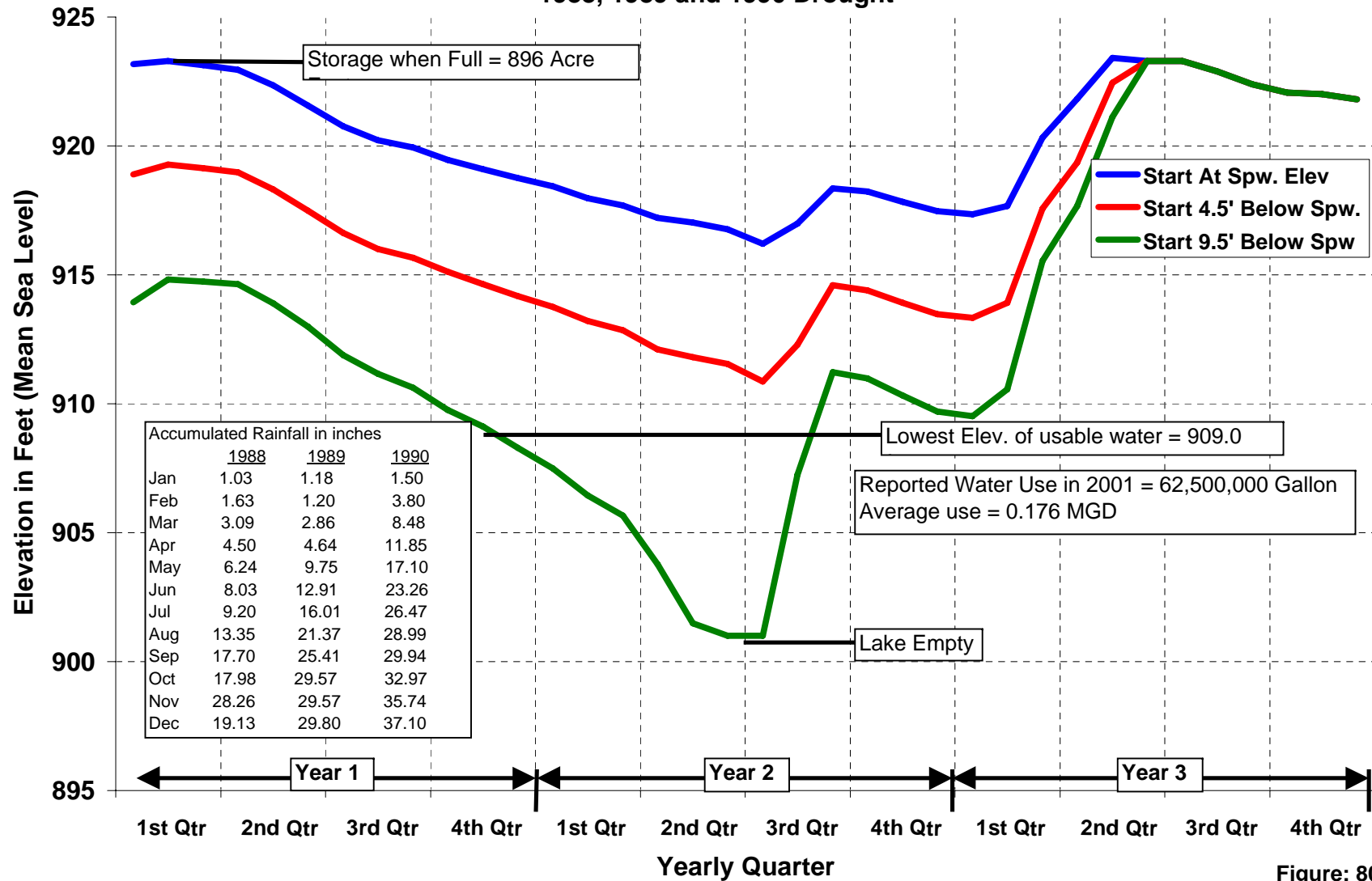


Figure: 80.3.b

Marceline, Missouri Water Supply 1955 Through 1958

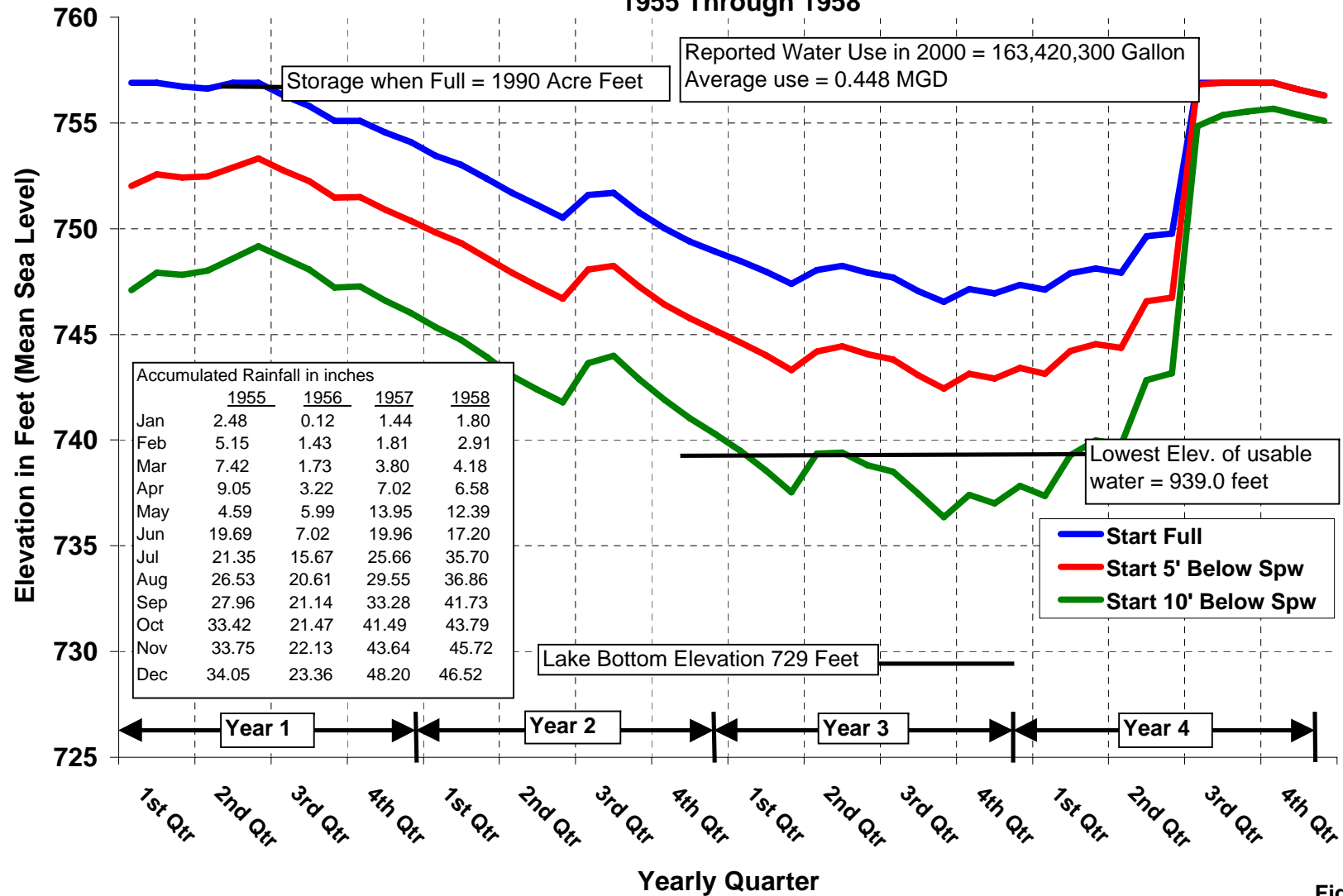


Figure 80.4.a

Marceline, Missouri Water Supply 1988, 1989 and 1990 Drought

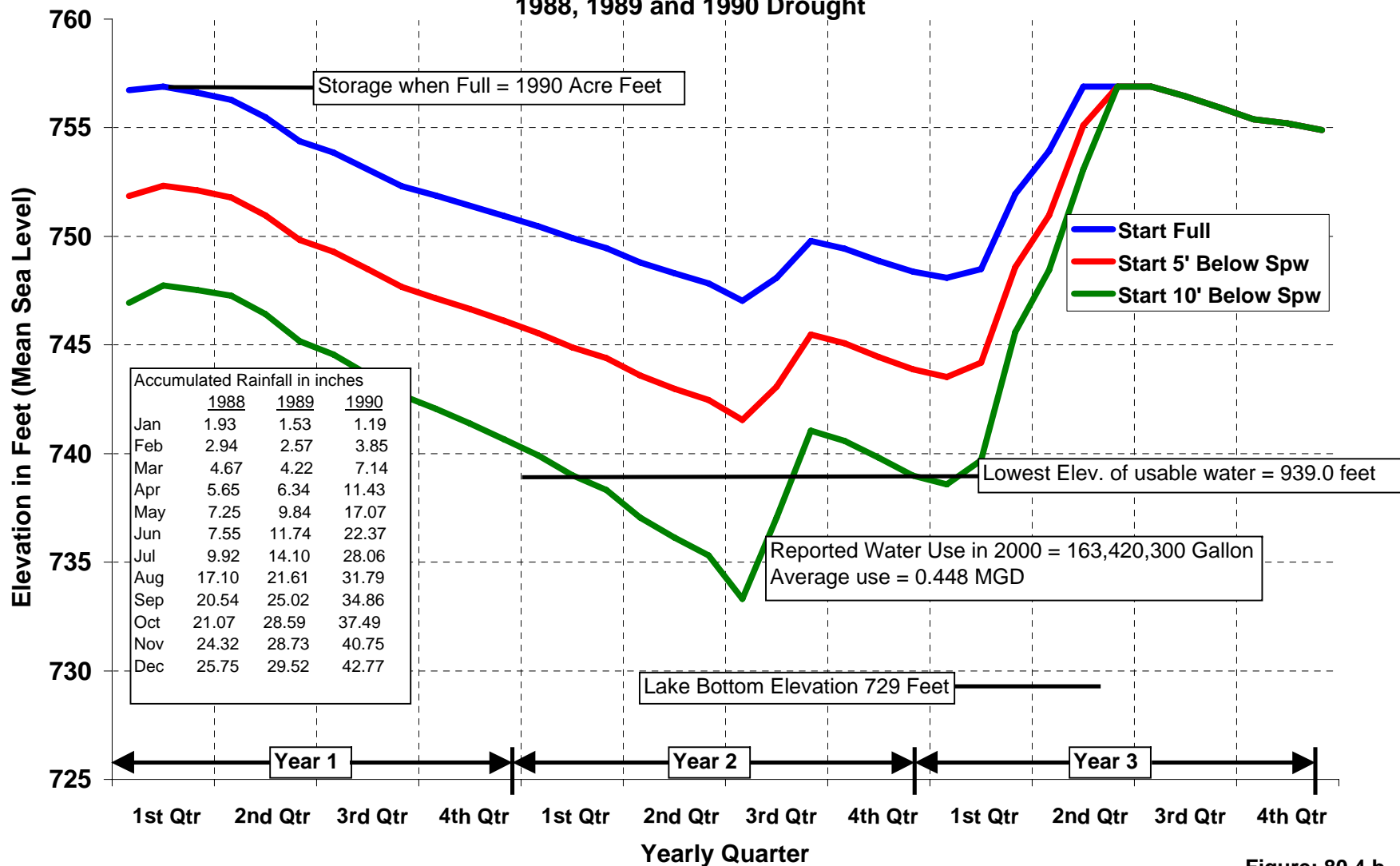


Figure: 80.4.b

MONROE CITY, MISSOURI
ROUTE "J" RESERVOIR
1955, 1956 and 1957

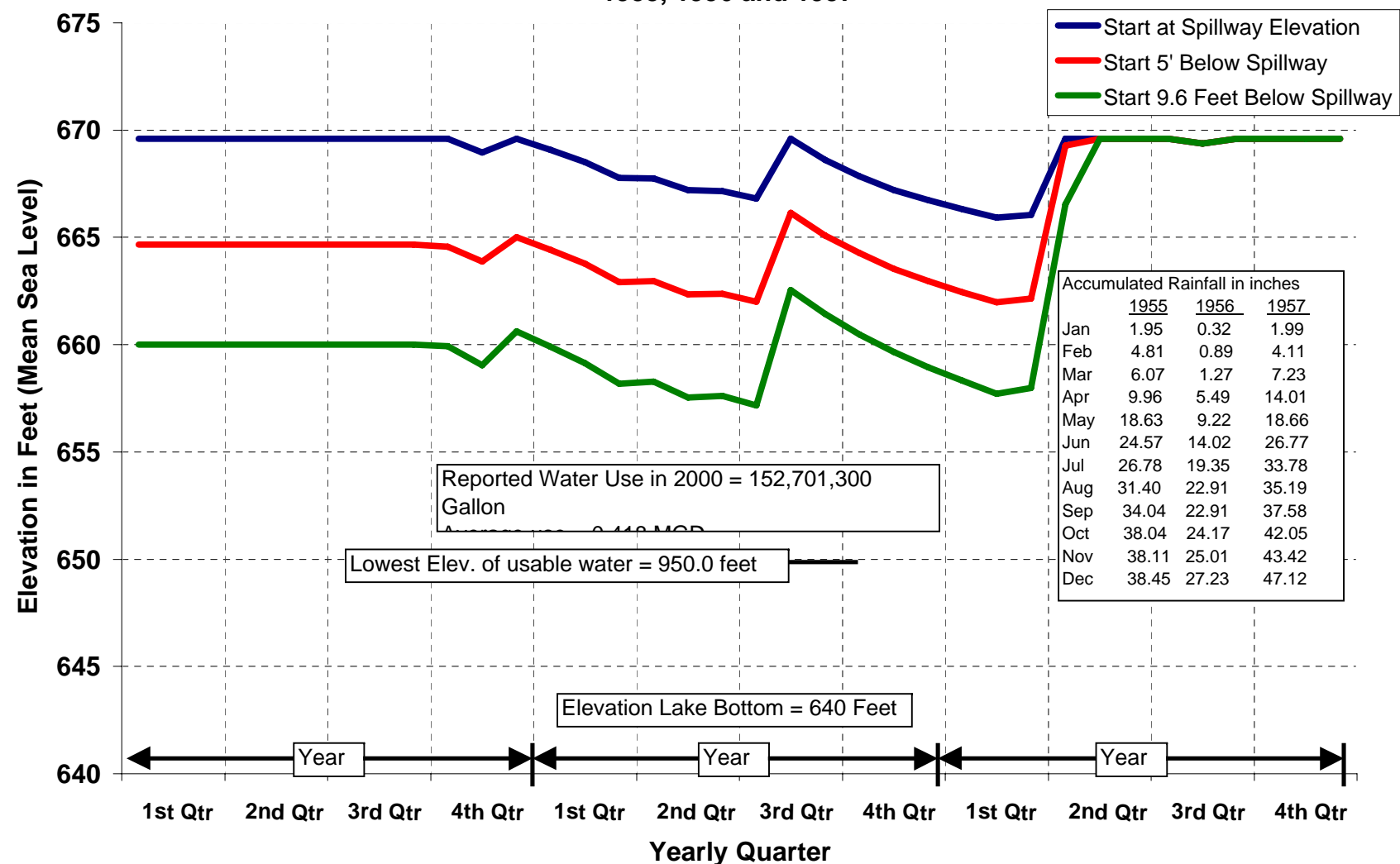


Figure: 80.5.a

**Monroe City, Missouri
Water Supply
Route "J" Reservoir
1988, 1989 and 1990**

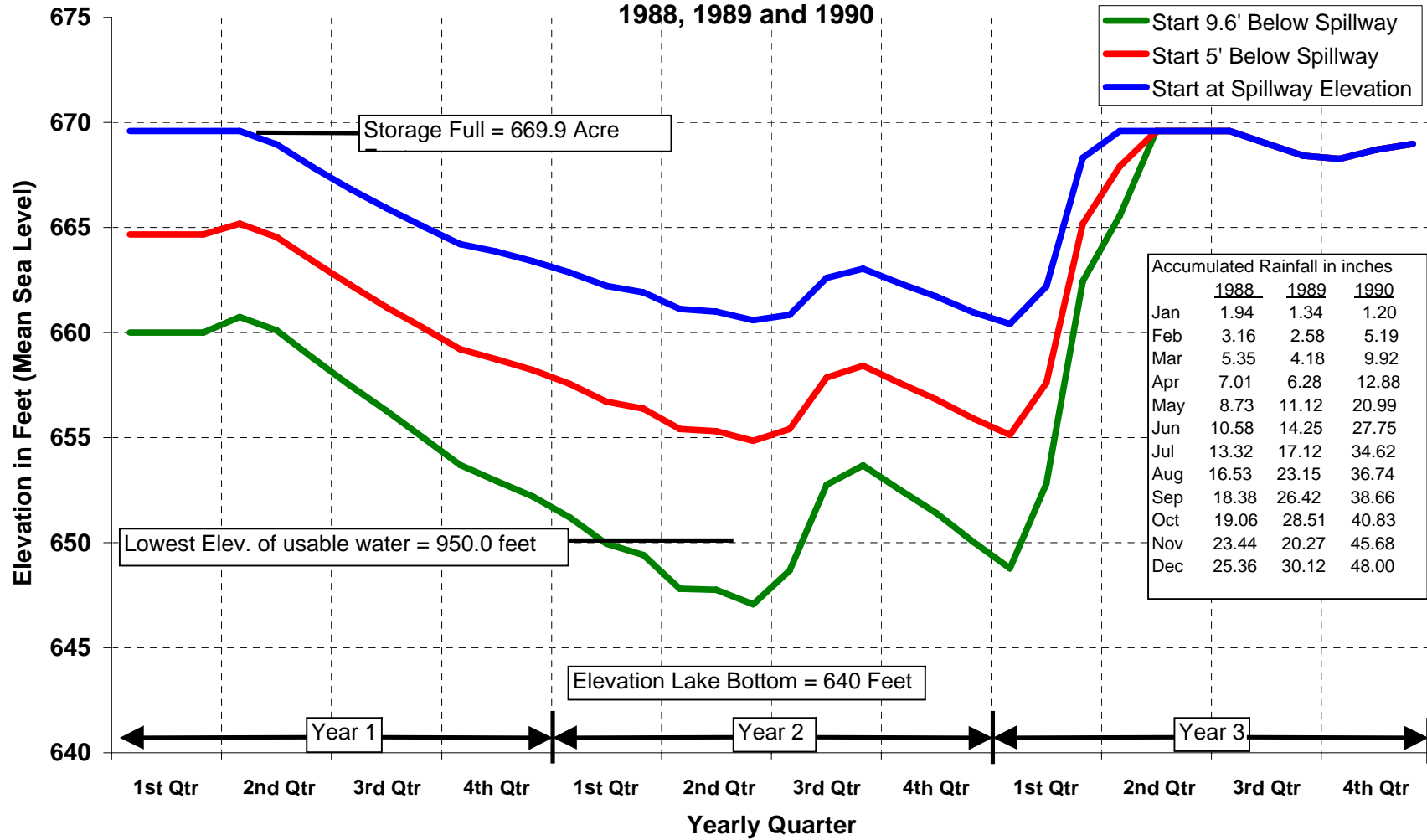


Figure: 80.5.b